

Claim Amendments

1. (Currently Amended) A clad-pumped, double clad, fiber laser, comprising:

one or more cores disposed within a pump cladding;
each core doped with a rare earth lasing ion;
5 each core having an oblong cross section;
there being either (a) a single core disposed at the center of said cladding or
(b) a central core disposed at the center of said cladding and additional cores
disposed outwardly of said central core, oriented in an array along a line inclusive of
the center of said cladding with ~~their~~ long axes of said central core and said
10 additional cores perpendicular to said line and with an equal distance between the
centers of adjacent cores;
thereby to provide a linearly polarized output laser beam;
each of said one or more cores having ~~there being~~ a mode discriminating
core characteristic selected from (c) index of refraction, (d) gain, and (e) cross
15 sectional dimension, said characteristic, in a fiber having a said single core, being
greatest at the center of said single core and progressively lower toward the
periphery of said single core, said characteristic of said central core, in a fiber
having said additional cores, being greater than said characteristic of all others of
said cores, said characteristic of each one of said other cores being lower than said
20 characteristic of any of said cores that are closer to said central core than said one
of said cores;
thereby causing radiation in said cores to phase-lock and transfer laser
power coherently into a linearly polarized, bright laser beam of the fundamental in-
phase supermode from all higher order supermodes belonging to the same array
25 structure.

2. (Currently Amended) A clad-pumped, double clad, fiber laser, comprising:

one or more cores disposed within a pump cladding;

each of said one or more cores ~~core~~ doped with a rare earth lasing ion;

5 there being either (a) a single core disposed at the center of said cladding or (b) a central core disposed at the center of said cladding and additional cores disposed outwardly of said central core;

each of said one or more cores having ~~there being~~ a modal discriminating core characteristic selected from (c) index of refraction, (d) gain, and (e) cross
10 sectional dimension, said characteristic, in a fiber having said ~~a~~ single core, being greatest at the center of said single core and progressively lower toward the periphery of said single core, said characteristic of said central core, in a fiber having said additional cores, being greater than said characteristic of all others of
15 said cores, said characteristic of each one of said other cores being lower than said characteristic of any of said cores that are closer to said central core than said one of said cores;

thereby causing radiation in said cores to phase-lock and transfer laser power coherently into a bright laser beam of the fundamental in-phase supermode from all higher order supermodes belonging to the same array structure.

3. (Original) A laser according to claim 2 wherein:

there are a plurality of cores with the center to center spacing of said cores being between 15 and 50 microns.

4. (Original) A laser according to claim 2 wherein:

the cross section of said pump cladding is circular.

5. (Original) A laser according to claim 2 wherein:

the cross section of said pump cladding is rectangular.

6. (Original) A laser according to claim 2 wherein:
each core has an oblong cross section;
there being either (f) only one core or (g) a plurality of cores oriented in an
array along a line inclusive of the center of said cladding with their long axes
perpendicular to said line and with an equal distance between the centers of
adjacent cores;
thereby to provide a linearly polarized output laser beam.
7. (Original) A laser according to claim 2 wherein:
there is only one core.
8. (Original) A laser according to claim 2 wherein:
there are a plurality of said cores are arranged isometrically in at least one
ring surrounding said central core.
9. (Original) A laser according to claim 8 wherein:
there is only one ring of six cores surrounding said central core.
10. (Original) A laser according to claim 8 wherein:
there is a first ring of six cores surrounding said central core and a second
ring of twelve cores surrounding said first ring.
11. (Original) A laser according to claim 2 wherein:
said characteristic is index of refraction.
12. (Original) A laser according to claim 2 wherein:
there are a plurality of cores and said characteristic is gain.

13. (Original) A laser according to claim 2 wherein:
there are a plurality of cores and said characteristic is cross sectional
dimension.

14. (Currently Amended) A clad-pumped, double clad, fiber laser,
comprising:

one or more cores disposed within a pump cladding;

each of said one or more cores ~~core~~ doped with a rare earth lasing ion;

5 each of said one or more cores ~~core~~ having an oblong cross section;

there being either ~~(a)~~ a central core disposed at the center of said cladding
and additional cores disposed outwardly of said central core, oriented in an array
along a line inclusive of the center of said cladding with their long axes
perpendicular to said line and with an equal distance between the centers of
10 adjacent cores ~~or (b) a single core;~~

thereby to generate, when optically pumped, a single linearly polarized TE₀
mode output laser beam.

15. (Cancelled)

16. (Original) A laser according to claim 14 wherein:
there are a plurality of cores with substantially the same cross sectional
area as each other of said cores.

17. (Original) A laser according to claim 14 wherein:
there are a plurality of cores with substantially the same refractive index.

18. (Original) A laser according to claim 14 wherein:
there are a plurality of cores, said cores having a characteristic selected
from (a) index of refraction, (b) gain, and (c) cross sectional dimension, said

characteristic of said central core being greater than said characteristic of all others
5 of said cores, said characteristic of each one of said other cores being lower than
said characteristic of any of said cores that are closer to said central core than said
one of said cores;

thereby causing radiation in said cores to phase-lock and transfer laser
power coherently into a bright laser beam of the fundamental in-phase supermode
10 from all high order supermodes belonging to the same array structure.

19. (Original) A laser according to claim 14 wherein:
there are a plurality of cores, the center to center spacing of said cores is
between 15 and 50 microns.

20. (Original) A laser according to claim 14 wherein:
said pump cladding has a circular cross section.

21. (Original) A laser according to claim 14 wherein:
each core is rectangular.